

U.S. Department of Energy

Office of Energy Efficiency
and Renewable Energy

Office of Industrial
Technologies

INVENTIONS AND INNOVATION

Helping Bring Your Energy Ideas to Market



INVENTIONS & INNOVATION

Examples of Ideas that have Reached Commercial Markets

- **Meta-Lax Stress Relief Equipment** offers distinct advantages over conventional heat treatment methods. It uses less energy, is portable, can handle any size metal part, and treats metal stress in hours versus days.
- **Cradle Debarker** is an on-site, open-design debarking system with many advantages over conventional technology. It increases production efficiency by giving the debarking operator greater process control, saves trees by allowing a greater portion of the tree to be used, and increases the economic value and quality of wood products. Energy savings of 33% are attributed to the system's lower energy requirements and less product damage.
- **Electro-Optic Inspection of Heat Exchangers** is a laser based, nondestructive evaluation system for inspecting heat exchanger tubing for internal corrosion, erosion, scale buildup, and deformation. Benefits to petrochemical, pulp and paper, and power-generation plants include reduced downtime and increased efficiency.
- **Hydrodynamic/Multi Deflection Pad Bearing** optimizes bearing operation in high speed turbines, high load electric motors or gear boxes, air or gas compressors, and air conditioning refrigeration equipment. Energy loss due to friction is reduced up to 40% by using fluids as a wedge between pads and moving parts.
- **Dinh® Dehumidifier Heat Pipes** pre-cool return air to an air conditioner, thereby raising cooling coil efficiency and condensing more moisture. The heat pipes also reheat supply air to create a more comfortable temperature and relative humidity. This patented technology greatly increases moisture removal capabilities of air conditioners and can lower cooling system energy consumption by up to 50%.
- **Lenox Polymers** are specialty performance resins created from pulp mill waste (black liquor). The non-toxic, renewable-source resins have applications including foundry resins for metal casting, wood particulate binders (for plywood and particle board), and compression molding polymer systems. By using lignin, the natural glue that holds together tree fibers, Lenox Polymers save petrochemical resources and are free of formaldehyde, phenol, and styrene.

The Inventions and Innovation Program

Are you an individual inventor or small business planning to develop your energy-saving invention or innovation? Have you been searching for financial and technical support to bring your idea to market? The U.S. Department of Energy's (DOE's) Inventions and Innovation (I&I) Program can help.

This program provides financial assistance at two levels—up to \$40,000 or up to \$200,000, depending on the stage of development—for conducting early development and establishing technical performance of innovative ideas and inventions. Technologies within the areas of industry, power, transportation, or buildings that have a significant energy savings impact and future commercial market potential are eligible for financial support through a competitive solicitation process. I&I is particularly interested in supporting technology development and deployment in the agriculture (bio-based fuels), aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel industries. In addition to financial assistance, this program offers technical guidance and commercialization support to successful applicants.

Four Steps to Realizing Your Vision

1. ***Pre-Proposal Evaluation.*** Prior to the annual solicitation, a U.S. individual inventor or small technology-based company may submit an **optional**, short description (following a DOE format) to the DOE Golden Field Office. DOE provides a timely response regarding the idea's program relevance and information on how to submit a proposal for detailed review.
 2. ***Competitive Solicitation.*** DOE issues a formal solicitation once each fiscal year, which seeks proposals and includes instructions for completing a proposal.
 3. ***Grant Award.*** After a detailed review, DOE awards financial assistance grants to the winning proposals based on available funding each fiscal year.
 4. ***Mentoring and Networking.*** During and after the grant project period, assigned portfolio managers and a network of regional resource providers assist the grantees with their technical program management and market development planning.
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Notable Achievements

- More than 500 inventions have received financial support from DOE, with nearly 25% reaching the marketplace.
- Cumulative sales have reached nearly \$710 million.
- Cumulative energy savings of 0.6 quad have resulted.

Access to Resources and Expertise

The Inventions and Innovation Program provides non-financial support to awardees by helping innovators find technical partners, commercial sponsors, business plan resources, and financial resources. DOE also provides overall project assistance in the form of commercialization planning, work guidance, a market potential assessment of the innovation, and access to regional service providers in a variety of areas.

Examples of potential program support and resources:

- Mentoring for project development planning and management
- Regional training and learning centers for business planning
- Regional, state, and local level support for economic development
- Incubation centers specializing in small energy-related technology businesses
- Internet sites and information relevant to energy-related innovations
- Technology conferences and trade shows
- Forums for financial investors with particular interest in energy-related businesses.

Timeline for Fiscal Year 2000 Projects

- Pre-proposal period opens: August 3, 1998
- Pre-proposal period closes: April 2, 1999
- Solicitation opens: May 11, 1999
- Solicitation closes: July 30, 1999
- Awards announcement: On or about December 15, 1999.

The Office of Industrial Technologies (OIT) — Industries of the Future

DOE's Office of Industrial Technologies (OIT) encourages industry wide efforts to boost resource productivity through a process called Industries of the Future. The process, which focuses on energy- and resource-intensive materials and processing sectors, accelerates research and development of advanced technologies identified as priorities by industry. Participants in the process represent the agriculture, aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel industries. Together with the Industrial Assessment Centers, Best Practices in industrial plant motor, steam, and air systems, NICE³, and Inventions and Innovation programs, OIT assists inventors, small business, and industry in developing and implementing near-, medium- and long-term, energy efficient and environmentally beneficial technology.

For More Information

Information about upcoming events, workshops, pre-proposals, solicitations, and deadlines is posted on the Internet at <http://www.oit.doe.gov/inventions>. You can also learn more by requesting materials from the Energy Efficiency and Renewable Energy Clearinghouse (EREC) at (800) DOE-EREC.

For additional information, contact:

Inventions and Innovation Program
Mail Stop EE-24
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585
(202) 586-2079

For a copy of the pre-proposal format or solicitation, contact:

Inventions and Innovation Program
U.S. DOE Golden Field Office
1617 Cole Blvd. #1734
Golden, CO 80401
Fax: (303) 275-4788



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